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# THE MARINE BIOLOGICAL LABORATORY

## FIFTEENTH REPORT

### FOR THE YEAR 1912

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## I. TRUSTEES

### EX OFFICIO

F. R. LILLIE, *Director*, The University of Chicago.  
GILMAN A. DREW, *Assistant Director*, Marine Biological Laboratory.  
D. BLAKELY HOAR, *Treasurer*, 161 Devonshire Street, Boston, Mass.  
G. N. CALKINS, *Clerk of the Corporation*, Columbia University.

### TO SERVE UNTIL 1916

H. H. DONALDSON.....Wistar Institute of Anatomy and Biology.  
M. J. GREENMAN.....Wistar Institute of Anatomy and Biology.  
C. W. HARGITT.....Syracuse University.  
H. S. JENNINGS.....Johns Hopkins University.  
GEORGE LEFEVRE.....University of Missouri.  
A. P. MATHEWS.....The University of Chicago.  
G. H. PARKER.....Harvard University.

### TO SERVE UNTIL 1915

H. C. BUMPUS.....University of Wisconsin.  
R. A. HARPER.....Columbia University.  
W. A. LOCY.....Northwestern University.  
JACQUES LOEB.....Rockefeller Institute for Medical Research.  
F. P. MALL.....Johns Hopkins University.  
GEORGE T. MOORE.....Missouri Botanical Garden, *Secretary of the Board*.

L. L. NUNN.....Telluride, Colo.

JOHN C. PHILLIPS.....299 Berkeley Street, Boston, Mass.

TO SERVE UNTIL 1914

CORNELIA M. CLAPP.....Mount Holyoke College.

E. G. CONKLIN.....Princeton University.

ROSS G. HARRISON.....Yale University.

CAMILLUS G. KIDDER.....27 William Street, New York City.

M. M. METCALF.....Oberlin College.

WILLIAM PATTEN.....Dartmouth College.

JACOB REIGHARD.....University of Michigan.

W. B. SCOTT.....Princeton University.

TO SERVE UNTIL 1913

S. F. CLARKE.....Williams College.

CHARLES COOLIDGE.....Ames Building, Boston, Mass.

C. R. CRANE.....2559 Michigan Boulevard, Chicago, Ill.,  
*President of the Board.*

ALFRED G. MAYER.....Carnegie Institution.

T. H. MORGAN.....Columbia University.

ERWIN F. SMITH.....United States Department of Agriculture.

E. B. WILSON.....Columbia University.

## II. ACT OF INCORPORATION

No. 3170.

### COMMONWEALTH OF MASSACHUSETTS

**Be It Known,** That whereas Alpheus Hyatt, William Sanford Stevens, William T. Sedgwick, Edward G. Gardiner, Susan Minns, Charles Sedgwick Minot, Samuel Wells, William G. Farlow, Anna D. Phillips and B. H. Van Vleck have associated themselves with the intention of forming a Corporation under the name of the Marine Biological Laboratory, for the purpose of establishing and maintaining a laboratory or station for scientific study and investigation, and a school for instruction in biology and natural history, and have complied with the provisions of the statutes of this Commonwealth in such case made and provided, as appears from the certificate of the President, Treasurer, and Trustees of said Corporation, duly approved by the Commissioner of Corporations, and recorded in this office;

*Now, therefore,* I, HENRY B. PIERCE, Secretary of the Commonwealth of Massachusetts, *do hereby certify* that said A. Hyatt, W. S. Stevens, W. T. Sedgwick, E. G. Gardiner, S. Minns, C. S. Minot, S. Wells, W. G. Farlow, A. D. Phillips, and B. H. Van Vleck, their associates and successors, are legally organized and established as, and are hereby made, an existing Corporation, under the name of the MARINE BIOLOGICAL LABORATORY, with the powers, rights, and privileges, and subject to the limitations, duties, and restrictions, which by law appertain thereto.

*Witness* my official signature hereunto subscribed, and the seal of the Commonwealth of Massachusetts hereunto affixed, this twentieth day of March, in the year of our LORD ONE THOUSAND, EIGHT HUNDRED and EIGHTY-EIGHT.

HENRY B. PIERCE,  
*Secretary of the Commonwealth.*

[SEAL.]

### III. BY-LAWS OF THE CORPORATION OF THE MARINE BIOLOGICAL LABORATORY

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I. The annual meeting of the members shall be held on the second Tuesday in August, at the Laboratory, in Woods Hole, Mass., at 12 o'clock noon, in each year, and at such meeting the members shall choose by ballot a Treasurer and a Clerk, who shall be, *ex officio*, members of the Board of Trustees, and Trustees as hereinafter provided. At the annual meeting to be held in 1897, not more than twenty-four Trustees shall be chosen, who shall be divided into four classes, to serve one, two, three, and four years, respectively, and thereafter not more than eight Trustees shall be chosen annually for the term of four years. These officers shall hold their respective offices until others are chosen and qualified in their stead. The Director and Assistant Director, who shall be chosen by the Trustees, shall also be Trustees, *ex officio*.

II. Special meetings of the members may be called by the Trustees, to be held in Boston or in Woods Hole at such time and place as may be designated.

III. The Clerk shall give notice of meetings of the members by publication in some daily newspaper published in Boston at least fifteen days before such meeting, and in case of a special meeting the notice shall state the purpose for which it is called.

IV. Twenty-five members shall constitute a quorum at any meeting.

V. The Trustees shall have the control and management of the affairs of the Corporation; they shall present a report of its condition at every annual meeting; they shall elect one of their number President and may choose such other officers and agents as they may think best; they may fix the compensation and define the duties of all the officers and agents; and may remove them, or any of them, except those chosen by the members, at any time; they may fill vacancies occurring in any manner in their own number or in any of the offices. They shall from time to time elect members to the Corporation upon such terms and conditions as they may think best.

VI. Meetings of the Trustees shall be called by the President, or by any two Trustees, and the Secretary shall give notice thereof by written or printed notice sent to each Trustee by mail, postpaid.

Seven Trustees shall constitute a quorum for the transaction of business. The Board of Trustees shall have power to choose an Executive Committee from their own number, and to delegate to such Committee such of their own powers as they may deem expedient.

VII. The President shall annually appoint two Trustees, who shall constitute a committee on finance, to examine from time to time the books and accounts of the Treasurer, and to audit his accounts at the close of the year. No investments of the funds of the Corporation shall be made by the Treasurer except approved by the finance committee in writing.

VIII. The consent of every Trustee shall be necessary to a dissolution of the Marine Biological Laboratory. In case of dissolution, the property shall be given to the Boston Society of Natural History, or some similar public institution, on such terms as may then be agreed upon.

IX. These By-Laws may be altered at any meeting of the Trustees, provided that the notice of such meeting shall state that an alteration of the By-Laws will be acted upon.

X. Any member in good standing may vote at any meeting, either in person or by proxy duly executed.

## IV. TREASURER'S REPORT

FOR THE YEAR ENDING DECEMBER 28, 1912

### RECEIPTS

Annual Dues . . . . .	\$	716.00	
Chemicals . . . . .		7.83	
Charles R. Crane . . . . .		16,500.00	
Fire insurance (Botany Building) . . . . .		995.19	
Mess . . . . .		10,088.12	
Mess extension . . . . .		1,007.47	
Miscellaneous:			
Interest on deposits, use of drain, rent			
of microscopes, telephones, notary			
fees, etc. . . . .		91.48	
Rockefeller Institute . . . . .		300.00	
Supply Department . . . . .		13,966.35	
Tuitions . . . . .		<u>4,875.00</u>	\$48,547.44

### PAYMENTS

Overdraft on December 22, 1911 . . . . .	\$	56.41
Administration (including expenses of treasurer's office) . . . . .		5,696.29
Bath house . . . . .		40.92
Biological Bulletin (net) . . . . .		951.05
Boats . . . . .		4,452.97
Carpenter . . . . .		299.93
Chemical Department . . . . .		1,351.66
Dormitories . . . . .		385.41
Fish trap . . . . .		1,510.02
Homestead, ice house . . . . .		206.18
Homestead, shop . . . . .		12.30
Homestead, mess . . . . .		8,507.02
Instructors' salaries . . . . .		3,125.00
Insurance . . . . .		4.64
Interest . . . . .		150.00

Library . . . . .	1,243.09	
Machinery and tools . . . . .	199.46	
Maintenance of buildings and grounds . . .	2,100.09	
Mess extension . . . . .	1,749.04	
New laboratory . . . . .	42.00	
Oil house . . . . .	49.26	
Pile driver . . . . .	119.45	
Printing and advertising . . . . .	40.86	
Real estate . . . . .	801.00	
Repairs to botany building . . . . .	187.06	
Scientific apparatus . . . . .	277.36	
Stone building . . . . .	7.00	
Store house . . . . .	896.90	
Sundries . . . . .	388.72	
Supply department . . . . .	<u>8,907.65</u>	<u>\$43,758.74</u>
Cash on hand December 28, 1912		\$ 4,788.70



# MARINE BIOLOGICAL LABORATORY INVESTMENTS

JANUARY 1, 1913

## RESERVE FUND

Amount of fund December 1, 1899.....	\$4,553.14	
Received from life memberships.....	600.00	
Income to January 1, 1913.....	2,516.90	
Gain from sale of securities and rights.....	<u>372.38</u>	
	8,042.42	
Paid for current expenses of Laboratory.....	<u>6,000.</u>	\$2,042.42
Reserve Fund now consists of the following:		
\$3,000 Am. Tel. & Tel. Co. 4s cost.....	\$2,921.25	
6 shs. Am. Smelting & Refining Co. Pfd. cost	732.00	
5 shs. Gen. Electric Co.....	756.25	
14 shs. United Shoe Mach. Corp. Pfd. cost..	393.75	
Cash.....	<u>239.17</u>	
	\$5,042.42	
Part of the above stocks and bonds are held as		
collateral for loan of.....	<u>3,000.</u>	\$2,042.42

## LIBRARY FUND

Amount of fund December 1, 1899.....	\$ 866.15	
Income to January 1, 1913.....	866.27	
Gain from sale of securities and rights.....	<u>96.39</u>	\$1,828.81
The Library Fund now consists of the following:		
3 shs. Am. Tel. & Tel. Co. cost.....	\$ 383.25	
4/5 of \$1,000 Am. Tel. & Tel. Co. 4s cost....	799.00	
1 sh. Am. Smelting & Refining Co. Pfd. cost.	122.00	
2 shs. General Electric Co. cost.....	302.50	
5 shs. United Shoe Mach. Corp. Pfd. cost ...	140.63	
Cash.....	<u>101.43</u>	\$1,828.81

## LUCRETIA CROCKER FUND

Amount of fund December 1, 1899.....	\$2,500.	
Income after paying students' fees.....	643.41	
Sale of rights.....	8.79	\$3,152.20
The Lucretia Crocker Fund now consists of the following:		
18 shs. Vermont & Mass. R. R. Co. cost....	\$2,416.50	
1 sh. West End Street R'y Co. cost.....	83.	
1 sh. Am. Tel. & Tel. Co. cost.....	127.75	
1/5 sh. of \$1,000 Am. Tel. & Tel. Co. 4s cost	194.75	
1 sh. General Electric Co.....	151.25	
Cash.....	178.95	\$3,152.20

CASH RECEIPTS AND DISBURSEMENTS ON ACCOUNT OF FUNDS SINCE  
AUGUST 13, 1912*Reserve Fund*

Cash on hand August 13, 1912.....	\$ 202.92	
Div. 6 shs. Am. Smelting & Refining Co. Pfd.		
Sept. 1.....	10.50	
Div. 6 shs. Am. Smelting & Refining Co. Pfd.		
Dec. 1.....	10.50	
Div. 5 shs. Gen. Elec. Co.....	10.	
Div. 14 shs. United Shoe Mach. Corp. Pfd.....	5.25	\$ 239.17

*Crocker Fund*

Cash on hand August 13, 1912.....	\$ 119.20	
Div. 1 sh. West End St. Ry.....	1.75	
Div. 18 shs. Vermont & Mass. R. R.....	54.	
Div. 1 sh. Gen. Elec. Co.....	2.	
Div. 1 sh. Am. Tel. & Tel. Co.....	2.	178.95

*Library Fund*

Cash on hand August 13, 1912.....	\$ 86.05	
Div. 1 sh. Am. Smelting & Refining Co. Pfd.		
Sept. 1.....	1.75	
Div. 1 sh. Am. Smelting & Refining Co. Pfd.		
Dec. 1.....	1.75	
Div. 5 shs. United Shoe Mach. Corp. Pfd.....	1.88	
Div. 2 shs. Gen. Electric Co.....	4.00	
Div. 3 shs. Am. Tel. & Tel. Co.....	6.00	101.43
Cash on hand December 28, 1912.....		\$ 519.55

## V. THE DIRECTOR'S REPORT.

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TO THE TRUSTEES OF THE MARINE BIOLOGICAL LABORATORY:

*Gentlemen:* I have the honor to transmit herewith a report of the twenty-fifth session of the Marine Biological Laboratory. The attendance of investigators at the Laboratory in 1912 exceeded that of previous years by a considerable number, 93 in 1912 as compared with 82 in 1911, and 62 in 1910. The number of students in the courses was 67 as compared with 65 in 1911 and 64 in 1910. The total attendance was 160 in 1912, 147 in 1911, and 126 in 1910. During part of the season the buildings were uncomfortably crowded; indeed if it had not been for the additional space furnished by the Kidder annex it would have been necessary to turn away a number of investigators. The student accommodations are at present ample and likely to remain so, but the limitation of space assignable to individual investigators, especially in the general research laboratories, is a serious handicap to the best kind of work. For the season of 1913 some additional space will be available, if needed, in the Yacht Club building; but the facilities in this building and in the Kidder annex will be at best makeshifts.

Fortunately, such conditions will not long continue, as the plans for the new laboratory building are now complete, and the building will be erected in the coming summer.

The number of subscribing institutions again showed an increase, from 25 in 1911 to 29 in 1912. In 1907 the number was 16 and the increase since has been steady. The following subscriptions were new: Carleton College, Else Seringhaus Scholarship of Normal College, Laboratory of Comparative Anatomy of Harvard Medical School, University of Texas, and Wabash College. It is gratifying to see this growing recognition by institutions of the value of the facilities offered by the Laboratory; but we must not cease to labor for its ex-

tension, because the Laboratory will be on a sounder basis when a larger number of institutions feel responsibility for their share of its support.

The growth of the Laboratory in numbers and the yearly purchase of houses in Woods' Hole by members of the Laboratory have combined to reduce the living accommodations in Woods Hole for transient workers at the Laboratory below the margin of safety. There is no doubt that if we have even a slight increase of numbers another year some will be unable to secure rooms in the village, and the price of available rooms will become excessive. Last season the Laboratory rented a house for use as a woman's dormitory with accommodations for about 14, and for some years past over 20 men have been accommodated in the stone building. We are face to face with the actual necessity of providing a dormitory for women. Some emergency provision must be made for the summer of 1913, and at the same time we must look beyond this to the necessity of more satisfactory and permanent provision. We cannot expect that the villagers will take care of any increase, because they find it more profitable to rent their houses to families than rooms to detached individuals.

After the erection of the new building it is possible that one of the smaller laboratory buildings might be made over as a dormitory for women; but whether this is desirable or not, it is important that the matter should receive prompt consideration in order that there may be no handicap on the attendance of women at the Laboratory. It is suggested that committees, both of the Board of Trustees and of the Corporation, be organized to consider the problem.

During the past summer the assistant director undertook to collect funds for much needed improvements and enlargement of the mess. Appeals were made to members of the Board of Trustees and of the Corporation and former members of the Laboratory with very gratifying results. There exists to-day, as in earlier periods of the history of the Laboratory, a strong feeling of loyalty and attachment to the interests of the institution, and it is my conviction that this feeling should be organized in some permanent form to serve definite needs of the Laboratory.

Care should be taken that no undue pressure be exerted, and that no one should come to feel his membership in the corporation in any sense a burden; but there can be no doubt that it is possible to avoid this and at the same time to secure effective support for various needs. Moreover, such activities heighten the sense of devotion of those taking part in them. Our organization is primarily coöperative; there should be adequate outlets for all who feel disposed to aid in any way.

Since the last annual report was made death has removed from our number Professor T. H. Montgomery, Jr., clerk of the corporation and ex officio a member of the board of trustees. At the summer meeting of the corporation and board of trustees of the Marine Biological Laboratory the following resolution was adopted:

"On March 19, 1912, Dr. Thomas Harrison Montgomery, Jr., professor of zoölogy in the University of Pennsylvania, clerk of the corporation and a trustee of the Marine Biological Laboratory, died at the early age of 39 years. He was a loyal friend of this Laboratory, with which he had been connected as investigator and instructor for about fifteen years. He was an investigator of high rank, whose discoveries have become a permanent part of biological science; an instructor and organizer of unusual ability; a man of fine instincts and lofty ideals, to whom the 'rare old name of gentleman' applied with peculiar force.

"The corporation and trustees of the Marine Biological Laboratory record their great loss and personal sorrow in his death, and extend to the members of his family deep sympathy in their bereavement."

Professor Montgomery's place in the corporation and board of trustees has been filled by the election of Dr. Gary N. Calkins, of Columbia University. Another vacancy in the board was filled by the election of Dr. H. H. Donaldson, of the Wistar Institute of Anatomy and Biology. To both of these gentlemen we extend out cordial greetings.

The treasurer's report shows a surplus of receipts over expenditures, thanks to the inexhaustible generosity of the president of the board, Mr. Crane. The running expenses were

higher in 1912 than in 1911 owing to (1) the appointment of the assistant director to give full time to the Laboratory, (2) increase in the janitor and collecting service, (3) to slight unavoidable increases in the running expenses of various departments. The receipts from various sources have increased year by year, so that the relation of earned income to total running expenses has not varied much. The following table will be of interest in this connection:

Income.	1909	1910	1911	1912
1. Dues.....	\$ 666.00	\$ 606.00	\$ 728.00	\$ 716.00
2. Misc.....	205.44	856.11	122.96	{ 91.48 7.83
3. Supply dept.....	8,549.55	9,300.58	10,303.61	13,966.35
4. Mess (net).....		551.97	1,111.93	1,581.10
5. Tuition, etc.....	3,708.35	4,150.00	4,574.99	5,175.00
Total.....	13,128.34	15,464.66	16,841.49	20,837.76
<i>Expense,</i>				
Total.....	21,585.79	22,547.48	27,929.07	31,526.46
Amount needed to be covered by donations.	8,457.45	7,082.82	11,087.58	10,688.70
Proportion of deficit to total expense.....	39 + %	31 + %	39 + %	34 - %

The total expenses outside of the actual purchase of real estate, building, and operation of the mess are given in these figures. The credits that might naturally be allowed for permanent improvements such as the building of an ice house and work shop and the purchase of the motor boat *Sagitta* in 1911 do not appear.

It is obvious that the expense of operation is rapidly increasing in correspondence partly with the growth in attendance and partly in consequence of the endeavor to furnish more efficient service. The estimates for 1913 show another probable increase of \$4,000 to \$5,000 in running expenses, and in 1914, with the new building in operation, yet farther increase is inevitable. The growth of the Laboratory entails increased financial responsibility. The only way of meeting the situation and proving equal to the opportunity of scientific service that is ours is to undertake at once to raise an endowment fund of not less than \$500,000. With this to rely on the institution could hold permanently all that it has gained. Fortunately, the Laboratory has no debts,

and an emergency could be met to a certain extent by radical retrenchment.

There are appended as parts of this report a list of the staff and of the students and investigators for 1912, together with a tabular view of attendance for the last five years; the list of subscribing institutions, the evening lectures, and the membership of the Corporation.

## I. THE STAFF—1912

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F. R. LILLIE, DIRECTOR,  
Professor of Embryology, The University of Chicago.

GILMAN A. DREW, ASSISTANT DIRECTOR,  
Marine Biological Laboratory.

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### ZÖÖLOGY

#### I. INVESTIGATION

##### Zoölogy and Embryology

- GARY N. CALKINS.....Professor of Protozoölogy, Columbia University.  
E. G. CONKLIN.....Professor of Zoölogy, Princeton University.  
GILMAN A. DREW.....Assistant Director, Marine Biological Laboratory.  
GEORGE LEFEVRE.....Professor of Zoölogy, University of Missouri.  
FRANK R. LILLIE.....Professor of Embryology, The University of Chicago.  
T. H. MORGAN.....Professor of Experimental Zoölogy, Columbia University.  
E. B. WILSON.....Professor of Zoölogy, Columbia University.

#### II. INSTRUCTION

- CASWELL GRAVE.....Associate Professor of Zoölogy, Johns Hopkins University.  
RAYMOND BINFORD.....Fellow in Zoölogy, Johns Hopkins University.  
A. S. PEARSE.....Associate Professor of Biology, St. Louis University School of Medicine.  
BERTRAM G. SMITH.....Graduate Student of Zoölogy, Columbia University.  
E. D. CONGDON.....Instructor in Embryology, Cornell University Medical College.  
ROBERT CHAMBERS, JR...Graduate Student of Zoölogy, Columbia University.



**EMBRYOLOGY****I. INVESTIGATION (See Zoölogy)****II. INSTRUCTION**

GILMAN A. DREW . . . . . Assistant Director, Marine Biological Laboratory.

LORANDE L. WOODRUFF . . Assistant Professor of Biology, Yale University.

WILLIAM E. KELLICOTT . . Professor of Biology, Goucher College.

ROBERT A. BUDINGTON . . Associate Professor of Zoölogy, Oberlin College.

**PHYSIOLOGY****I. INVESTIGATION**

ALBERT P. MATHEWS . . . Professor of Physiological Chemistry, The University of Chicago.

R. S. LILLIE . . . . . Instructor in Comparative Physiology, University of Pennsylvania.

HAROLD C. BRADLEY . . . Assistant Professor of Physiological Chemistry, University of Wisconsin.

**II. INSTRUCTION**

R. S. LILLIE . . . . . Instructor in General Physiology, University of Pennsylvania.

WALTER E. GARREY . . . Associate Professor of Physiology, Washington University Medical School.

FRANK P. KNOWLTON . . . Professor of Physiology, Syracuse University.

EDWARD B. MEIGS . . . . Associate in Physiology, Wistar Institute of Anatomy and Biology.

**PHILOSOPHICAL ASPECTS OF BIOLOGY AND ALLIED SCIENCES****LECTURES**

EDWARD G. SPAULDING . . Assistant Professor of Philosophy, Princeton University.

**BOTANY**

GEORGE T. MOORE . . . . Professor of Plant Physiology and Applied Botany, Washington University.

GEORGE R. LYMAN . . . . Assistant Professor of Botany, Dartmouth College.

B. M. DUGGAR . . . . . Professor of Plant Physiology, Cornell University.

IVEY F. LEWIS.....Professor of Biology, Randolph-Macon  
College.

W. J. ROBBINS.....Assistant in Plant Physiology, Cornell  
University.

#### **LIBRARY**

H. MCE. KNOWER.....University of Cincinnati, Librarian.

#### **CHEMICAL SUPPLIES**

OLIVER S. STRONG.....College of Physicians and Surgeons, New  
York City, Chemist.

---

G. M. GRAY.....Curator of Supply Department.

THOMAS M. DOUTHART

and JOHN J. MORTON.. Collectors in Zoölogy.

O. F. CURTIS.....Collector in Botany, Oberlin College.

JOHN VEEDER.....Cockswain.

## 2. INVESTIGATORS AND STUDENTS 1912

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### INVESTIGATORS—1912

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#### ZOOLOGY

- BAITSELL, GEORGE A., Assistant in Zoölogy, Yale University.  
BECKWITH, CORA J., Instructor in Biology, Vassar College.  
BINFORD, RAYMOND, Fellow in Zoölogy, Johns Hopkins University.  
BORING, ALICE M., Assistant Professor of Zoölogy, University of Maine.  
BUDINGTON, ROBERT A., Associate Professor of Zoölogy, Oberlin College.  
CALKINS, GARY N., Professor of Protozoölogy, Columbia University.  
CARY, LEWIS R., Instructor in Zoölogy, Princeton University.  
CHAMBERS, ROBERT, JR., Associate Professor of Embryology and Histology, University of Cincinnati.  
CLAPP, CORNELIA M., Professor of Zoölogy, Mount Holyoke College.  
CLARK, ELEANOR LINTON, Special Student, Johns Hopkins University.  
CLARK, ELIOT R., Associate in Anatomy, Johns Hopkins University.  
CONKLIN, EDWIN G., Professor of Biology, Princeton University.  
DEXTER, J. S., Graduate Student, Columbia University.  
DREW, GILMAN, A. Assistant Director, Marine Biological Laboratory, Woods Hole, Mass.  
EDWARDS, DAYTON J., Tutor in Physiology, College of the City of New York.  
GLASER, OTTO C., Junior Professor of Zoölogy, University of Michigan.  
GRAVE, CASWELL, Associate Professor of Zoölogy, Johns Hopkins University.  
GREGORY, LOUIS H., Instructor in Zoölogy, Barnard College.  
HARVEY, E. NEWTON, Instructor in Zoölogy, Princeton University.  
HICKERNELL, LOUIS M., Graduate Fellow, Princeton University.  
HOGUE, MARY J., Instructor in Zoölogy, Mount Holyoke College.  
KELLCOTT, WILLIAM E., Professor of Biology, Goucher College.  
KNOWER, H. MCE., Professor of Anatomy, University of Cincinnati.  
LEWIS, MARGARET REED, 1931 East 31st Street, Baltimore, Md.  
LEWIS, WARREN H., Associate Professor of Anatomy, Johns Hopkins University.  
LILLIE, FRANK R., Director, Marine Biological Laboratory, and Professor of Embryology, University of Chicago.  
LOEB, LEO, Director, Department of Pathology, Barnard Free Skin and Cancer Hospital, St. Louis, Mo.  
LUND, ELMER J., Bruce Fellow, Johns Hopkins University.  
MALONE, EDWARD F., Assistant Professor of Anatomy, University of Cincinnati.  
MORRILL, CHARLES V., Instructor in Anatomy, University and Bellevue Hospital Medical College, New York City.  
MORGAN, T. H., Professor of Experimental Zoölogy, Columbia University.  
NOWLIN, NADINE, Instructor in Zoölogy, University of Kansas.

ORCUTT, ALFRED W., Fellow in Zoölogy, University of Illinois.  
PAPPENHEIMER, ALWIN M., Associate in Pathology, Columbia University.  
PATTERSON, JOHN T., Adjunct Professor of Zoölogy, University of Texas.  
PEARSE, A. S., Assistant Professor of Zoölogy, University of Wisconsin.  
SMITH, BERTRAM G., Assistant Professor of Zoölogy, State Normal College, Ypsilanti, Mich.  
SPAULDING, EDWARD G., Assistant Professor of Philosophy, Princeton University.  
STOCKARD, CHARLES R., Professor of Anatomy, Cornell Medical College.  
STRONG, OLIVER S., Instructor in Anatomy, Columbia University.  
WIEMAN, H. L., Assistant Professor of Zoölogy, University of Cincinnati.  
WILLIAMS, L. W., Instructor in Comparative Anatomy, Harvard Medical School.  
WILSON, E. B., Professor of Zoölogy, Columbia University.  
WOODRUFF, L. L., Assistant Professor of Biology, Yale University.

### PHYSIOLOGY

BANCROFT, FRANK W., Associate, Rockefeller Institute for Medical Research.  
BRADLEY, HAROLD C., Assistant Professor of Physiological Chemistry, University of Wisconsin.  
DONALDSON, H. H., Professor of Neurology, Wistar Institute of Anatomy and Biology.  
EWALD, W. F., Fellow, Rockefeller Institute for Medical Research.  
GARREY, W. E., Associate Professor of Physiology, Washington University Medical College.  
KITE, GEORGE L., Fellow in Pathology, Sprague Institute, University of Chicago.  
KNOWLTON, FRANK P., Professor of Physiology, Syracuse University.  
LILLIE, RALPH S., Assistant Professor of Experimental Zoölogy, University of Pennsylvania.  
LOEB, JACQUES, Rockefeller Institute for Medical Research.  
LYON, E. P., Professor of Physiology, St. Louis University.  
MEIGS, EDWARD B., Fellow in Physiology, Wistar Institute of Anatomy and Biology.  
ROSENOW, EDWARD C., Assistant Professor of Medicine, Rush Medical College.  
WASTENEYS, HARDOLPH, Associate, Rockefeller Institute for Medical Research.  
WHERRY, WILLIAM B., Professor of Bacteriology, Cincinnati Hospital, Cincinnati, Ohio.

### BOTANY

DERICK, CARRIE M., Professor of Morphological Botany, McGill University.  
DUGGAR, BENJAMIN M., Professor of Plant Physiology, Washington University.  
FROMME, FRED. D., Assistant in Botany, Columbia University.  
HARPER, ROBERT A., Professor of Botany, Columbia University.  
LEWIS, IVEY F., Professor of Biology, Randolph-Macon College.  
LYMAN, GEORGE R., Assistant Professor of Botany, Dartmouth College.  
MARQUETTE, WILLIAM G., Columbia University.  
MOORE, GEORGE T., Director, Missouri Botanical Gardens, St. Louis.  
OSTERHOUT, W. J. V., Assistant Professor of Botany, Harvard University.  
ROBBINS, WILLIAM J., Assistant in Plant Physiology, Cornell University.

**BEGINNING INVESTIGATORS****ZOÖLOGY**

- ADKINS, WALTER S., Graduate Student, Columbia University.  
ALLYN, HARRIET M., Instructor in Zoölogy, Vassar College.  
BROWNE, ETHEL N., Research Assistant, Princeton University.  
CARVER, GAIL C., Graduate Student, Columbia University.  
DUNGAY, NEIL S., Graduate Student, University of Chicago.  
FLANIGEN, RUTH, Woodbury, New Jersey.  
GOODRICH, HUBERT B., Assistant in Zoölogy, Columbia University.  
HAYDEN, MARGARET A., Teacher of Biology, Western High School, Baltimore, Md.  
HELLBRUNN, LEWIS V., Graduate Student, Columbia University.  
HEWITT, JOSEPH H., 2145 North Halsted Street, Chicago, Ill.  
HOGE, MILDRED A., Graduate Student, Columbia University.  
HOWLAND, RUTH B., Associate Professor of Biology, Sweet Briar College.  
JUST, ERNEST E., Associate Professor of Biology, Howard University.  
McCANN, WILLIAM S., Graduate Student, Cornell Medical College.  
MORRIS, MARGARET, 53 Edgehill Road, New Haven, Conn.  
PACKARD, CHARLES, Assistant in Zoölogy, Columbia University.  
PATTEN, HAZEL, Laboratory Assistant, Western High School, Baltimore, Md.  
SINK, EMORY W., Assistant in Zoölogy, University of Michigan.  
SPENCER, HENRY J., Graduate Student, Columbia University.  
WALLACE, EDITH M., Research Assistant, Columbia University.  
WHEELER, ISABEL, Graduate Student, Columbia University.

**PHYSIOLOGY**

- KANDA, SAKYO, Fellow in Psychology, Clark University.  
KELLERSBERGER, EUGENE R., Graduate Student, Washington University Medical School.

**BOTANY**

- BARTHOLEMEW, ELBERT T., Instructor in Botany, University of Wisconsin.  
HOWE, CAROLINE G., Teacher of Biology, East Side High School, Newark, N. J.

# STUDENTS

1912

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## ZOÖLOGY

- ADAMS, ETHEL M., Assistant in Biology, Carleton College, Northfield, Minn.  
ALLARD, ANNE D., Teacher, Boston Normal School, Boston, Mass.  
BEHM, FLORENCE C., Assistant in Biology, Syracuse University.  
BROOKS, ALICE D., Mount Holyoke College.  
CLARK, KATHARINE, Oberlin College.  
COGSWELL, MARGUERITE A., Instructor in Biology, The Misses Maxen's School, Dobbs Ferry, New York.  
FERGUSON, RUSSELL S., Student, University of Maine.  
FRANK, MRS. SIMON W., 22 Talbot Road, Windsor Hills, Baltimore, Md.  
GOVER, MARY, 600 North Carrollton Avenue, Baltimore, Md.  
GRIEST, ELLWOOD, Assistant in Zoölogy, University of Michigan.  
HALSTED, HALCYON, Student, College of Physicians and Surgeons, Columbia University.  
HEDGE, MABEL L., Research Assistant in Zoölogy, Columbia University.  
ILLUICK, J. THERON, Graduate Student, Syracuse University.  
JOHNSON, EDITH M., 150 N. 20th Street, Philadelphia, Pa.  
KENNERLY, MARTHA M., Instructor, Normal College, New York City.  
LAMBERT, ROBERT A., Associate in Pathology, Columbia University.  
MCDONALD, J. DALY, Oberlin College.  
MACKENZIE, JOHN A., Student, Williams College.  
MATLOCK, CHARLOTTE L., Woodbury, New Jersey.  
PASTERNAK, JESSE, 303 President Street, Brooklyn, N. Y.  
RENFREW, FRANKLIN W., 177 Woodruff Avenue, Brooklyn, New York.  
SPENCE, ELIZABETH, Student, University of Chicago.  
TREDICK, HELEN F., Teacher of Biology, Erasmus Hall High School, Brooklyn, New York.  
WHITE, EDITH G., 77 Brighton Avenue, Allston, Mass.

## EMBRYOLOGY

- BRADLEY, BARBARA, 62 Trumbull Street, New Haven, Conn.  
CASHMAN, MARIE E., Graduate Student, Syracuse University.  
DOLLY, WILLIAM LEE, JR., Student Assistant, Johns Hopkins University.  
FERGUSON, ALBERT V., Student, University of Maine.  
ICKES, MARGUERITE, The Normandie, Columbus, Ohio.  
ISAACS, RAPHAEL, Assistant in Zoölogy, University of Cincinnati.  
JAMESON, A. PRINGLE, Assistant in Zoölogy, University of Aberdeen, Aberdeen, Scotland.  
JARVIS, MARJORIE M., Student Assistant, University of Texas.  
PAIGE, BERYL H., Laboratory Assistant, Mount Holyoke College.

- ROOT, FRANCIS M., 150 N. Professor Street, Oberlin, Ohio.  
SCHLEHNER, H. W., Graduate Student, University of Pennsylvania.  
SHAW, MARY B., Barnard College, Columbia University.  
STARK, JOHN R., 110 S. McMillan Street, Cincinnati, Ohio.  
SURLS, JOSEPH K., Student, Williams College.  
WILSON, CHARLOTTA W., 103 LeMoyné Avenue, Washington, Pa.

### PHYSIOLOGY

- CLAPP, G. A., Assistant in Zoölogy, Oberlin College.  
ELKUS, SAVILLA A., Instructor in Philosophy, Vassar College.  
FIELD, HAZEL E., Teacher of Science, Belhaven, Jackson, Miss.  
GOLDMAN, IRMA A., Student, University of Kansas.  
MAY, HENRY G., Student, University of Rochester.  
OPPENHEIMER, ADELE, Volunteer, Pathology Laboratory, College of Physicians and Surgeons, Columbia University.  
OVERTON, JAMES B., Associate Professor of Plant Physiology, University of Wisconsin.  
SPAETH, REYNOLD A., Teaching Fellow in Zoölogy, Harvard University.  
STEWART, NORMAN H., Assistant Professor of Biology, Bucknell University.  
WARDWELL, EDWARD H., M. E. Fellow in Biology, Princeton University.  
WISLOCKI, GEORGE B., Student, Washington University, St. Louis, Mo.

### BOTANY

- BENEDICT, DON M., Portland, Michigan.  
CURTIS, OTIS F., 103 North Main Street, Oberlin, Ohio.  
DUFF, DOROTHY, Student, McGill University.  
EWING, ARTHUR E., 5956 Cabanne Place, St. Louis, Mo.  
FOSTER, GOODWIN L., Student, Dartmouth College.  
GUSTAFSON, FELIX, Student, Northland College, Ashland, Wisconsin.  
HOAR, CARL S., Graduate Student, Harvard University.  
HOPPING, ALEITA, Student, Normal College, New York City.  
LEVAN, WILLIAM C., Catawissa, Pa.  
MILLER, CLARE, Student, McGill University.  
NOBLE, ARLYLE, Smith College, Northampton, Mass.  
PENNYPACKER, JOHN Y., Instructor in Biology, Central High School, Philadelphia, Pa.  
STONE, MABEL A., Instructor in Botany, Wellesley College.  
THOMAS, CECIL C., Instructor in Botany, Wabash College.  
WEEKS, LUCY M., Student, Oberlin College.  
WESTON, WILLIAM H., JR., Graduate Student, Harvard University.  
WOOD, ISABELLE T., Student, Vassar College.

### 3. TABULAR VIEW OF ATTENDANCE

	1908	1909	1910	1911	1912
INVESTIGATORS—Total.....	52	66	62	82	93
Occupying Rooms					
Zoölogy.....	32	39	33	42	44
Physiology.....	6	7	11	18	14
Botany.....	8	4	9	8	10
Occupying Tables					
Zoölogy.....	6	14	6	12	21
Physiology.....		2	2	2	2
Botany.....					2
STUDENTS—Total.....	48	63	64	65	67
Zoölogy.....	19	36	31	26	24
Embryology.....	15	12	10	20	15
Physiology.....	3	9	5	6	11
Botany.....	11	6	17	13	17
TOTAL ATTENDANCE.....	100	129	126	147	160
INSTITUTIONS REPRESENTED—					
Total.....					57
By Investigators.....	25	27	26	37	43
By Students.....	26	20	24	31	36
SCHOOLS and ACADEMIES					
REPRESENTED					
By Investigators.....	2	3	5	3	2
By Students.....	3	11	6	9	1



#### 4. SUBSCRIBING INSTITUTIONS, 1912

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CARLETON COLLEGE.  
COLUMBIA UNIVERSITY.  
DARTMOUTH COLLEGE.  
ELSE SERINGHAUS SCHOLARSHIP OF NORMAL COLLEGE, NEW YORK.  
GOUCHER COLLEGE.  
HARVARD MEDICAL SCHOOL, LABORATORY OF COMPARATIVE ANATOMY.  
LUCRETIA CROCKER SCHOLARSHIP—BOSTON PUBLIC SCHOOLS.  
MILTON HERSEY SCHOLARSHIP—MCGILL UNIVERSITY.  
MOUNT HOLYOKE COLLEGE.  
OBERLIN COLLEGE.  
PRINCETON UNIVERSITY.  
ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.  
SHEFFIELD SCIENTIFIC SCHOOL, YALE UNIVERSITY.  
SMITH COLLEGE.  
SYRACUSE UNIVERSITY.  
UNIVERSITY OF CHICAGO.  
UNIVERSITY OF CINCINNATI.  
UNIVERSITY OF ILLINOIS.  
UNIVERSITY OF KANSAS.  
UNIVERSITY OF MICHIGAN.  
UNIVERSITY OF PENNSYLVANIA.  
UNIVERSITY OF ROCHESTER.  
UNIVERSITY OF TEXAS.  
VASSAR COLLEGE.  
WABASH COLLEGE.  
WESTERN COLLEGE FOR WOMEN.  
WELLESLEY COLLEGE.  
WILLIAMS COLLEGE.  
WISTAR INTSITUTE OF ANATOMY AND BIOLOGY.

## 5. EVENING LECTURES, 1912

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- PROF. W. E. CASTLE....." Unit Characters in Heredity "  
Friday, July 5.
- PROF. CHARLES S. MINOT..." Senescence ".....Tuesday, July 9.
- PROF. FRANK M. CHAPMAN." A Natural History Reconnaissance in Mexico "....Friday, July 12.
- DR. GEORGE H. SHULL....." The Bearing of Cross and Self-Fertilization on Heredity and Evolution ".....Tuesday, July 16.
- PROF. H. E. CRAMPTON....." A Biological Reconnaissance in South America,"...Friday, July 19.
- DR. R. S. LILLIE....." The Role of Membranes in Cell-Processes "....Tuesday, July 23.
- DR. C. M. CHILD....." Certain Dynamic Factors in Reproduction and their Significance ".....Friday, July 26.
- PROF. E. G. CONKLIN....." The Mechanism of Cell-Division ".....Tuesday, July 30.
- PROF. W. L. TOWER....." Experimental Transmutation of Specific and Generic Characters ".....Friday, Aug. 2.
- PROF. E. O. JORDAN....." The Spread of Typhoid "...  
Tuesday, Aug. 6.
- PROF. CHARLES E. BESSEY." The Phyletic Arrangement of Flowering Plants "...Friday, Aug. 9.

## 6. MEMBERS OF THE CORPORATION

---

### LIFE MEMBERS, 1912

- ALLIS, MR. E. P., JR., Palais Carnoles, Menton, France.  
ANDREWS, MRS. GWENDOLEN FOULKE, 821 St. Street, Baltimore, Md.  
BILLINGS, MR. R. C., 66 Franklin Street, Boston, Mass.  
CAREY, MR. ARTHUR ASTOR, Fayerweather Street, Boston, Mass.  
CLARKE, PROF. S. F., Williams College, Williamstown, Mass.  
CONKLIN, PROF. EDWIN G., Princeton University, Princeton, N. J.  
CRANE, MR. C. R., 2559 Michigan Boulevard, Chicago, Ill.  
DAVIS, MAJOR HENRY M., Syracuse, New York.  
EVANS, MRS. GLENDOWER, 12 Otis Place, Boston, Mass.  
FARLOW, PROF. W. G., Harvard University, Cambridge, Mass.  
FAY, MISS S. B., 88 Mt. Vernon Street, Boston, Mass.  
FOLSOM, MISS AMY, 88 Marlboro Street, Boston, Mass.  
FOOT, MISS KATHARINE, 80 Madison Avenue, New York City.  
GARDINER, MRS. E. G., Woods Hole, Mass.  
GARDINER, MISS EUGENIA, 15 West Cedar Street, Boston, Mass.  
HANNAMAN, MR. CHARLES E., 103 First Street, Troy, New York.  
HARRISON, Ex-PROVOST C. C., University of Pennsylvania, Philadelphia  
HIGGINSON, MR. HENRY L., 191 Commonwealth Avenue, Boston, Mass.  
JACKSON, MISS M. C., 88 Marlboro Street, Boston, Mass.  
JACKSON, MR. CHARLES C., 24 Congress Street, Boston, Mass.  
KENNEDY, MR. GEORGE G., 284 Warren Street, Roxbury, Mass.  
KIDDER, MR. C. G., 27 William St., New York City.  
KIDDER, MR. NATHANIEL T., Milton, Mass.  
KING, MR. CHARLES A.  
LEE, MRS. FREDERIC S., 279 Madison Avenue, New York City.  
LOWELL, MR. A. LAWRENCE, 171 Marlboro St., Boston, Mass.  
MARRS, MRS. LAURA NORCROSS, 9 Commonwealth Avenue, Boston, Mass.

- MASON, MISS E. F., 1 Walnut Street, Boston, Mass.  
MASON, MISS IDA M., 1 Walnut Street, Boston, Mass.  
MEANS, MR. JAMES HOWARD, 196 Beacon Street, Boston, Mass.  
MERRIMAN, MRS. DANIEL, Worcester, Mass.  
MINNS, MISS SUSAN, 14 Louisburg Square, Boston, Mass.  
MINNS, MR. THOMAS, 14 Louisburg Square, Boston, Mass.  
MINOT, DR. CHARLES S., Harvard Medical School, Boston, Mass.  
MIXTER, MISS M. C., 241 Marlboro Street, Boston, Mass.  
MORGAN, MR. J. PIERPONT, JR., Wall and Broad Sts., New York.  
MORGAN, PROF. T. H., Columbia University, New York City.  
MORGAN, MRS. T. H., New York City.  
NOYES, MISS EVA J., 28 South Willow St., Montclair, N. J.  
NUNN, MR. LUCIAN L., Telluride, Colo.  
OSBORN, PROF. HENRY F., American Museum of Natural History,  
New York.  
PELL, MR. ALFRED, Highland Falls, Orange Co., N. J.  
PHILLIPS, DR. JOHN C., 299 Berkeley St., Boston, Mass.  
PHILLIPS, MRS. JOHN C., 299 Berkeley Street, Boston, Mass.  
PORTER, DR. H. C., University of Pennsylvania, Philadelphia, Pa.  
PULSIFER, MR. W. H., Newton Center, Mass.  
ROGERS, MISS A. P., 5 Joy Street, Boston, Mass.  
SEARS, DR. HENRY F., 420 Beacon St., Boston, Mass.  
SHEDD, MR. E. A.  
SMITH, MRS. C. C., 286 Marlboro St., Boston, Mass.  
STROBELL, MISS E. C., 80 Madison Avenue, New York City.  
THORNDIKE, DR. EDWARD L., Teachers' College, Columbia  
University, New York City.  
TRELEASE, PROF. WILLIAM, Missouri Botanical Gardens, St.  
Louis, Mo.  
WARE, MISS MARY L., 41 Brimmer Street, Boston, Mass.  
WARREN, MRS. S. D., 67 Mt. Vernon St., Boston, Mass.  
WHITNEY, MR. HENRY M., Brookline, Mass.  
WILLCOX, MISS MARY A., Wellesley College, Wellesley, Mass.  
WILMARTH, MRS. H. D., Elliott Street, Jamaica Plain, Mass.  
WILLIAMS, MRS. ANNA P., 505 Beacon Street, Boston, Mass.  
WILSON, DR. E. B., Columbia University, New York City.  
WILSON, PROF. W. P., Philadelphia Museum, Philadelphia, Pa.

## MEMBERS, AUGUST, 1912

- ABBOTT, PROF. J. F., Washington University, St. Louis, Mo.  
ABBOTT, MARGARET B., Bennett School, Millbrook, New York.  
ADAMS, DR. C. F., University of Arkansas, Fayetteville, Ark.  
ADDISON, DR. W. H. F., University of Pennsylvania, Philadelphia, Pa.  
ADKINS, MR. W. S., Department of Zoölogy, Columbia University, New York.  
ALLYN, MISS HARRIET M., Vassar College, Poughkeepsie, New York.  
ALSBURG, DR. CARL S., U. S., Box 32, Station F., Washington, D. C.  
BAITSELL, MR. GEORGE A., Sheffield Scientific School, Yale University, New Haven, Conn.  
BAKER, DR. E. H., 5729 Kimbark Avenue, Chicago, Illinois.  
BANCROFT, PROF. F. W., Rockefeller Institute for Medical Research, New York City.  
BARDEEN, PROF. C. R., University of Wisconsin, Madison, Wis.  
BECKWITH, MISS CORA J., Vassar College, Poughkeepsie, New York.  
BIGELOW, PROF. MAURICE A., Teachers College, Columbia University, New York City.  
BIGELOW, PROF. R. P., Massachusetts Institute of Technology, Boston, Mass.  
BINFORD, DR. RAYMOND, Johns Hopkins University, Baltimore, Md.  
BLATCHFORD, MR. E. W., 230 North Clinton Street, Chicago, Ill.  
BRADLEY, DR. HAROLD C., University of Wisconsin, Madison, Wis.  
BROWNE, ETHEL N., Princeton University, Department of Zoölogy, Princeton, N. J.  
BUCKINGHAM, MISS EDITH N., 342 Marlboro Street, Boston, Mass.  
BUDINGTON, PROF. ROBERT A., Oberlin College, Oberlin, Ohio.  
BUMPUS, DR. H. C., University of Wisconsin, Madison, Wis.  
BYRNES, DR. ESTHER F., 193 Jefferson Avenue, Brooklyn, New York.  
CALKINS, DR. GARY N., Columbia University, New York City.

- CALVERT, DR. PHILIP P., University of Pennsylvania, Philadelphia, Pa.
- CARLSON, DR. A. J., University of Chicago, Chicago, Ill.
- CARVER, MR. GAIL L., Department of Zoölogy, Columbia University, New York City.
- CARY, DR. L. R., Princeton University, Princeton, N. J.
- CATTELL, DR. J. McKEEN, Garrison-on-Hudson, New York.
- CHAMBERS, DR. ROBERT, JR., University of Cincinnati, Cincinnati, Ohio.
- CHEESEMAN, DR. T. M., Garrison, New York.
- CHESTER, PROF. WEBSTER, Colby College, Waterville, Maine.
- CHIDESTER, DR. F. E., Rutgers College, New Brunswick, N. J.
- CHILD, DR. C. M., University of Chicago, Chicago, Ill.
- CLAPP, PROF. CORNELIA M., Mount Holyoke College, South Hadley, Mass.
- CLARK, DR. ELIOT R., Johns Hopkins University, Baltimore, Md.
- COE, DR. W. R., Yale University, New Haven, Conn.
- COLTON, DR. H. S., Bryn Mawr, Pa.
- COMSTOCK, DR. J. H., Cornell University, Ithaca, New York.
- COOLIDGE, MR. CHARLES A., Ames Building, Boston, Mass.
- CRAIG, PROF. WALLACE, University of Maine, Orono, Maine.
- CURTIS, DR. W. C., University of Missouri, Columbia, Mo.
- DERICK, PROF. CARRIE M., McGill University, Montreal Canada.
- DEXTER, PROF. J. S., Northland College, Ashland, Wisconsin.
- DODDS, DR. G. S., University of Missouri, Columbia, Mo.
- DONALDSON, DR. H. H., Wistar Institute of Anatomy and Biology, Philadelphia, Pa.
- DORRANCE, MISS ANN, Dorranceton, Pa.
- DORRANCE, MISS FRANCES, Dorranceton, Pa.
- DREW, DR. GILMAN A., Marine Biological Laboratory, Woods Hole, Mass.
- DUGGAR, DR. B. M., Washington University, St. Louis, Mo.
- EATON, PROF. E. H., Hobart College, Geneva, New York.
- EDWARDS, MR. DAYTON J., College of the City of New York, New York City.
- EIGENMANN, PROF. C. H., University of Indiana, Bloomington, Ind.

EWALD, MR. W. F., Rockefeller Institute for Medical Research,  
New York.

FERGUSON, DR. J. S., Cornell University Medical School, New  
York City.

FIELD, DR. IRVING A., 5 Enfield St., Worcester, Mass.

FLANIGEN, MISS RUTH, Woodbury, New Jersey.

FURST, MR. CLYDE, Carnegie Foundation, 576 Fifth Avenue,  
New York City.

GAGE, PROF. S. H., Cornell University, Ithaca, New York.

GARREY, DR. WALTER E., Washington University Medical  
School, St. Louis, Mo.

GIES, DR. WILLIAM J., Department of Biological Chemistry,  
Columbia University, New York City.

GLASER, PROF. O. S., University of Michigan, Ann Arbor, Mich.

GOLDFARB, DR. A. J., College of the City of New York, New York  
City.

GOODRICH, MR. H. B., Department of Zoölogy, Columbia Uni-  
versity, New York.

GRAVE, DR. CASWELL, Johns Hopkins University, Baltimore,  
Md.

GREENMAN, DR. M. J., Wistar Institute of Anatomy and Biology,  
Philadelphia, Pa.

GREGORY, MISS LOUISE H., Barnard College, Columbia Uni-  
versity, New York City.

HALL, DR. ROBERT W., Lehigh University, South Bethlehem, Pa.

HARGITT, DR. CHARLES W., Syracuse University, Syracuse, New  
York.

HARPER, DR. ROBERT A., Columbia University, New York City.

HARRISON, MR. A. C., 660 Drexel Bldg., 5th & Chestnut Streets,  
Philadelphia, Pa.

HARRISON, DR. ROSS G., Yale University, New Haven, Conn.

HARVEY, DR. BASIL C. H., University of Chicago, Chicago, Ill.

HARVEY, MR. E. N., Princeton University, Princeton, N. J.

HAYDEN, MISS MARGARET A., 1518 Mt. Royal Avenue, Balti-  
more, Md.

HAYES, PROF. S. P., Mount Holyoke College, South Hadley,  
Mass.

HEATH, DR. HAROLD, Stanford University, California.

HOAR, MR. D. BLAKELY, 161 Devonshire Street, Boston, Mass.

HOGUE, MISS MILDRED A., Department of Zoölogy, Columbia University, New York City.

HOGUE, DR. MARY J., Mount Holyoke College, South Hadley, Mass.

HOLMES, DR. S. J., University of California, Berkeley, Calif

ISELEY, MR. F. B., Oklahoma Academy of Science, Tonkawa, Okla.

JACOBS, DR. MERKEL H., University of Pennsylvania, Philadelphia, Pa.

JACKSON, DR. C. M., University of Missouri, Columbia, Mo.

JAYNE, DR. HORACE, Philadelphia, Pa., 318 South 19th Street.

JENNER, PROF. E. A., Simpson College, Indianola, Iowa.

JENNINGS, DR. H. S., Johns Hopkins University, Baltimore, Md.

JONES, DR. LYNDS, Oberlin College, Oberlin, Ohio.

JUST, MR. E. E., Howard University, Washington, D. C.

KELLEY, MR. F. J., University of Wisconsin, Madison, Wis.

KELLICOTT, DR. W. E., Goucher College, Baltimore, Md.

KELLY, MR. J. P., 2163 Gleason Avenue, Unionport, New York.

KENNEDY, MR. HARRIS, Readville, Mass.

KING, DR. HELEN D., Wistar Institute of Anatomy and Biology, Philadelphia, Pa.

KINGSBURY, PROF. B. F., Cornell University Medical School, New York City.

KINGSLEY, DR. J. S., Tufts College, Mass.

KIRKHAM, DR. W. B., Yale University, New Haven, Conn.

KNOWER, DR. H. McE., University of Cincinnati, Cincinnati, Ohio.

KNOWLTON, DR. F. P., Syracuse University, Syracuse, New York.

KNUDSON, PROF. LEWIS, Cornell University, Ithaca, New York.

KRIBS, DR. HERBERT, University of Pennsylvania, Philadelphia, Pa.

LAMBERT, DR. R. A., Department of Pathology, Columbia University, New York.



- LEE, DR. F. S., 437 West 59th Street, New York City.
- LEFEVRE, DR. GEORGE, University of Missouri, Columbia, Mo.
- LEWIS, DR. I. F., Randolph-Macon College, Ashland, Va.
- LEWIS, MRS. MARGARET REED, 1931 East 31st Street, Baltimore, Md.
- LEWIS, DR. W. H., Johns Hopkins University, Baltimore, Md.
- LILLIE, PROF. FRANK R., University of Chicago, Chicago, Ill.
- LILLIE, DR. RALPH S., University of Pennsylvania, Philadelphia, Pa.
- LINTON, PROF. EDWIN, Washington and Jefferson College, Washington, Pa.
- LOEB, DR. JACQUES, Rockefeller Institute for Medical Research, New York City.
- LOEB, DR. LEO, St. Louis Skin and Cancer Hospital, St. Louis, Mo.
- LUND, MR. ELMER J., Johns Hopkins University, Baltimore, Md.
- LUSCOMBE, MR. W. O., Woods Hole, Mass.
- LYMAN, DR. GEORGE R., Dartmouth College, Hanover, N. H.
- LYON, DR. E. P., St. Louis University Medical School, St. Louis, Mo.
- MCCLENDON, DR. J. F., Cornell University Medical School, New York City.
- MCGILL, DR. CAROLINE, University of Missouri, Columbia, Mo.
- MCGREGOR, DR. J. H., Columbia University, New York City.
- MCINDOO, MR. N. E., Bureau of Entomology, Washington, D. C.
- MACKENZIE, PROF. MARY D., Carnegie Institute of Technology, Pittsburgh, Pa.
- MCKIBBEN, DR. PAUL S., University of Chicago, Chicago, Ill.
- McMURRICH, PROF. J. P., University of Toronto, Toronto, Canada.
- MALL, PROF. F. P., Johns Hopkins University, Baltimore, Md.
- MARQUETTE, MR. WILLIAM G., Department of Botany, Columbia University, New York City.
- MAST, DR. S. O., Johns Hopkins University, Baltimore, Md.
- MATHEWS, PROF. A. P., University of Chicago, Chicago, Ill.
- MAYER, DR. A. G., Maplewood, New Jersey.
- MEIGS, DR. E. B., Wistar Institute of Anatomy and Biology, Philadelphia, Pa.

- MELTZER, DR. S. J., 13 West 121st Street, New York City.
- METCALF, DR. M. M., Oberlin College, Oberlin, Ohio.
- MINOR, MISS MARIE L., Wadleigh High School, 114th Street and 7th Avenue, New York City.
- MOENKHAUS, PROF. W. J., University of Indiana, Bloomington, Ind.
- MOORE, PROF. GEORGE T., Missouri Botanical Gardens, St. Louis, Mo.
- MOORE, PROF. J. PERCY, University of Pennsylvania, Philadelphia, Pa.
- MORGAN, PROF. H. A., Agricultural Experiment Station, Knoxville, Tenn.
- MORRILL, Prof. A. D., Hamilton College, Clinton, New York.
- MORRILL, DR. CHARLES V., University and Bellevue Hospital Medical College, New York City.
- MORSE, DR. MAX W., Trinity College, Hartford, Conn.
- MURBACH, DR. LOUIS, Poultney, Vermont.
- NACHTRIEB, DR. H. F., University of Minnesota, Minneapolis, Minn.
- NEAL, DR. H. V., Knox College, Galesburg, Ill.
- NEWMAN, DR. H. H., University of Chicago, Chicago, Ill.
- NICHOLS, MISS M. L., 3221 Race St., Philadelphia, Pa.
- NOWLIN, MISS NADINE, University of Kansas, Lawrence, Kansas.
- OGLEVEE, DR. C. S., Lincoln, Ill.
- ORTMANN, DR. A. E., Carnegie Museum, Pittsburgh, Pa.
- OSBURN, DR. RAYMOND C., Barnard College, Columbia University, New York City.
- OSTERHOUT, DR. W. J. V., Harvard University, Cambridge, Mass.
- PACKARD, MR. CHARLES, Columbia University, Department of Zoölogy, New York City.
- PACKARD, DR. W. H., Bradley Polytechnic Institute, Peoria, Ill.
- PAINTER, MR. T. S., Yale University, New Haven, Conn.
- PAPPENHEIMER, DR. A. M., Department of Pathology, Columbia University, New York City.
- PARKER, DR. G. H., 16 Berkeley Street, Cambridge, Mass.
- PATON, DR. STEWART, Princeton University, Princeton, N. J.

PATTEN, MISS J. B., Simmons College, Boston, Mass.

PATTEN, PROF. WILLIAM, Dartmouth College, Hanover, N. H.

PATTERSON, PROF. J. T., University of Texas, Austin, Texas.

PAYNE, DR. FERNANDUS, University of Indiana, Bloomington,  
Ind.

PEARSE, PROF. A. S., University of Wisconsin, Madison, Wis.

PIKE, DR. FRANK H., 437 West 59th Street, New York City.

PRENTISS, MISS HENRIETTA, Normal College, New York City.

QUACKENBUSH, MR. L. S., 27 West 73d Street, New York City.

RANDOLPH, DR. HARRIET, Byrn Mawr, Pa.

RANKIN, PROF. W. M., Princeton University, Princeton, N. J.

REA, PROF. PAUL M., College of Charleston, Charleston, S. C.

REIGHARD, PROF. JACOB, University of Michigan, Ann Arbor,  
Mich.

RICE, PROF. EDWARD L., Ohio Wesleyan University, Delaware,  
Ohio.

ROGERS, DR. CHARLES G., Syracuse University, Syracuse, New  
York.

ROMINE, MR. A. P., 1801 "I" Street, Bellingham, Wash.

ROSENOW, DR. EDWARD C., Rush Medical College, Chicago, Ill.

SCOTT, DR. G. G., College of the City of New York, New York  
City.

SCOTT, DR. J. W., State Agricultural College, Manhattan,  
Kansas.

SCOTT, DR. W. B., Princeton University, Princeton, N. J.

SHOREY, DR. MARIAN L., Milwaukee-Downer College, Milwau-  
kee, Wis.

SMITH, DR. BERTRAM G., State Normal College, Ypsilanti, Mich.

SMITH, DR. ERWIN F., U. S. Department of Agriculture, Wash-  
ington, D. C.

SOLLMAN, DR. TORALD, Western Reserve University, Cleveland,  
Ohio.

SPAULDING, PROF. E. G., Princeton University, Princeton, N. J.

SPENCER, MR. HENRY J., Columbia University, New York City.

SPOONER, MISS GEORGIANA B., 161 Bryant Street, Palo Alto,  
Calif.

STOCKARD, DR. CHARLES R., Cornell University Medical School, New York.

STREETER, DR. GEORGE L., University of Michigan, Ann Arbor, Mich.

STRONG, DR. O. S., 437 West 59th Street, New York City.

STRONG, DR. R. M., University of Chicago, Chicago, Ill.

SUMNER, DR. F. B., Sausalito, Calif., in care of U. S. F. Steamer *Albatross*.

TAYLOR, MISS KATHARINE A., Cascade, Washington County, Maryland.

TENNENT, DR. D. H., Bryn Mawr, Pa.

TERRY, DR. O. P., Purdue University, Lafayette, Ind.

THOMPSON, MISS CAROLINE B., 195 Weston Road, Wellesley, Mass.

THOMAS, DR. ADRIAN, Richmond College, Richmond, Va.

TINKHAM, MISS FLORENCE L., 56 Temple Street, Springfield, Mass.

TOMPKINS, MISS ELIZABETH M., 2015 Bedford Avenue, Brooklyn, New York.

TOWER, PROF. W. L., University of Chicago, Chicago, Ill.

TREADWELL, PROF. A. L., Vassar College, Poughkeepsie, New York.

USHER, MISS SUSANNAH, 9 Kirkland Place, Cambridge, Mass.

WAITE, PROF. F. C., Western Reserve University, Cleveland, Ohio.

WALKER, DR. GEORGE, Charles and Center Streets, Baltimore, Md.

WALLACE, PROF. LOUISE B., Mount Holyoke College, South Hadley, Mass.

WASTENEYS, MR. HARDOLPH, Rockefeller Institute for Medical Research, New York City.

WATSON, DR. FRANK E., 218 Washington Street, Geneva, New York.

WERBER, DR. E. I., Johns Hopkins University, Anatomical Laboratory, Baltimore, Md.

WHEELER, MISS ISABEL, Department of Zoölogy, Columbia University, New York City.

WHEELER, DR. W. M., Bussey Institution, Forest Hills, Boston, Mass.

WHERRY, DR. WILLIAM B., Cincinnati Hospital, Cincinnati, Ohio.

WHITNEY, DR. DAVID D., Wesleyan College, Middletown, Conn.

WIEMAN, DR. H. L., University of Cincinnati, Cincinnati, Ohio.

WILCOX, MISS ALICE W., 56 Alumni Avenue, Providence, R. I.

WILDMAN, DR. E. E., 4331 Osage Avenue, Philadelphia, Pa.

WILLIAMS, DR. ANNA W., 549 Riverside Drive, New York City.

WILSON, PROF. H. V., University of North Carolina, Chapel Hill, N. C.

WOLFE, DR. JAMES J., Trinity College, Durham, N. C.

WOODRUFF, DR. L. L., Yale University, New Haven, Conn.

WRIGHT, PROF. R. RAMSAY, University of Toronto, Toronto, Canada.

YERKES, DR. ROBERT M., Harvard University, Cambridge, Mass